DOCUMENT RESUME

ED 085 949 EC 060 854

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TITLE Computerized Verbal Content Analysis of Institutionalized Versus Community Retarded Children.
PUB DATE [73]
NOTE 29p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Childhood; *Educable Mentally Handicapped; *Exceptional Child Research; *Expressive Language; *Language Research; Mentally Handicapped; *Word Frequency

ABSTRACT

Analyzed was the verbal content of 20 institutionalized and 20 non-institutionalized retarded (mean IQ 64) children (mean age 10.7 years) matched for age and IQ to examine the hypothesis that sociological and psychological deficits exist for the institutionalized children and are reflected in language content. Unstructured speech samples were obtained from the children using the computerized General Inquirer System and the Harvard III Psychosociological Dictionary. Very few significant contentive category differences were noted between the institutionalized and non-institutionalized retarded children. (DB)

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COMPUTERIZED VERBAL CONTENT ANALYSIS OF INSTITUTIONALIZED VERSUS COMMUNITY RETARDED CHILDREN

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ABSTRACT

Previous studies have indicated structural language differences favoring the non-institutionalized retarded when compared to matched institutionalized retarded children. In this study, a sociological and psychological deficit hypothesis for institutional retardates was explored by utilizing a verbal content analysis system. Unstructured speech samples from 20 institutionalized and 20 non-institutionalized retarded children were employed utilizing the computerized General Inquirer System and the Harvard III Psychosociological Dictionary. Very few significant contentive category differences were noted between the institutional and non-institutional retarded children. The findings of this study do not support a psychological or sociological deficit hypothesis for institutionalized educable retardates as measured by this content analysis system.

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Most investigators have concluded that the institutionalization of retardates results in more severe verbal language deficits when compared with matched non-institutionalized retardates. Institutionalized children were found by Little and Williams (1937) to be more defective in vocabulary than matched non-institutionalized children. Schlanger (1954), using mean sentence length and average number of words per minutes, also compared matched groups of institutionalized and non-institutionalized children: children living at home scored significantly higher on both measures. Another study relevant to this apparent relationship was performed by Badt (1958), using a scoring system for qualitative analysis of verbatim vocabulary definitions: an inverse relationship was found between length of institutionalization and abstracting ability. At the conclusion of a series of studies, Lyle (1960) indicated that there are clearly retarding effects within the institution itself; it was speculated that the causes of institutional retarding effects included separation from parents, reduced learning opportunities and incentive to communicate. Sievers and Essa (1961) found that a non-institutionalized community group of mentally retarded subjects had significantly higher scores on the Developmental Language Facilities Test than a matched institutional group; the investigators proposed that in those subtests showing differences the common factor was the need for the child to express himself in a meaningful way.

These previous studies, heavily favoring non-institutionalized retardates in various measures of verbal language, have narrowly focused on

the structural and vocabulary elements of verbal language. Taken as a whole these studies suggest the possibility that institutional deprivation may negatively affect at least certain portions of verbal language.

Of more crucial importance is the role that institutionalization might play in the overall psychological and sociological well-being of the institutionalized retarded child. Public institutions for the retarded have been portrayed as failing to provide environments conducive to cognitive and affective development. A deficit hypothesis of institutionalization could be further tested by contrasting psychological and sociological verbal language content categories between institutional and non-institutional retarded children. Such an hypothesis would raise the following questions:

In comparison to non-institutionalized retardates--

1. Do institutionalized children refer less often to roles, to persons, and to ideals and norms of their culture?

2. Do institutionalized children use fewer words registering emotions? Do they use fewer words indicating comparisons of value? Do they make more evaluations of badness than of goodness? Do they use fewer words which refer to thought processes?

3. Does the language of institutionalized children show a higher incidence of words with aggressive connotations? Does their language contain more or fewer words connoting cooperation or submission?

4. Does the language of institutionalized retardates incorporate fewer references to time, space, quantity, and quality?

5. Within the underlying connotative levels of verbal language, does the language of institutionalized retardates reflect institutional, status, or psychological theme deficits? For example, do institutionalized children use more words indicating emphasis or exaggeration? Do they use more words connoting weakness or incapacity for action?

The above questions and speculations might be at least partially resolved by the use of a well-constructed content analysis system.

Content Analysis

Until recently content analysis research has been restricted--primarily because manual coding has proved to be tedious, monotonous, time-consuming, expensive and unreliable. In 1961, Stone and Bales developed the initial version of the General Inquirer computer content system. Words and phrases are pigeon-holed into specific content categories. The labels over the pigeon-holes--that is, the categories referred to in different content dictionaries--can be arbitrarily changed without impairing the overall efficiency of the General Inquirer system. The proper selection or construction of the content dictionary becomes the most critical aspect of content analysis. At this point, the raw verbal data is tied to theory and a basis for drawing conclusions and making inferences is achieved.

The content analysis dictionary that appears to offer the closest fit for the study of the language of retarded children is the Harvard III Psychosociological Dictionary. This is a general purpose content analysis dictionary that can be used in conjunction with research of a psychological and sociological character. In addition to application with adults, this diction-

ary has been successfully used for studying differences in the contentive aspects of language in normal children (Pine, 1970). In constructing this dictionary, Dumphy (1966) stated:

> . . . sociology furnished a set of categories better suited to classifying roles, objects, and cultural artifacts than did psychology. On the other hand, psychology presented more clearly defined categories for dynamic processes. We proceeded, therefore, to give most nouns (object names) a sociological definition and most verbs a psychological definition at the denotative level.

A distinct advantage with the General Inquirer, and the associated Harvard Dictionary, is that additional words can be tagged and inserted into the dictionary, thus facilitating the inclusion of certain high frequency words which might be unique in the language patterns of retarded children. The Harvard III Dictionary also takes a major step in helping to solve the problem of word ambiguity which is of fundamental concern in current linguistic semantic theory. The step entails using a unique key-word-in-context computer procedure permitting the construction of syntactically correct content categories and the accurate labeling of words sampled.

To summarize, the major purpose of this study was to ascertain if there were any significant delays or trends in the psychological and sociological verbal language content categories of institutional retardates when compared with their non-institutional peers. Based on previous structural and vocabulary language studies, it was hypothesized that the institutional retardates would show distinct deficiencies. A computer content analysis system was selected for measurement of these variables by utilizing broad based categories relating to persons, roles, cultural patterns, emotions, thought processes, evaluations, social-emotional and instrumental actions, time, space, quantity,

quality, institutional, status, and psychological themes.

The categories in the Harvard III Psychosociological Dictionary closely parallel and can be used to formulate answers to the broad questions posed above. Within the Harvard III Dictionary there are 57 first-order and 26 second-order tag categories. First-order tags represent the most explicit denotative meanings. Words are assigned to only one first-order category with no category overlap. As many second-order categories are assigned as are needed to complete the description. For example, the word "baby" has only one first-order category, neuter-role, but has two additional second-order categories, sign-weak and lower-status. A listing of these categories is contained in Table 1.

(Approximate position of Table 1)

METHOD

The experimental group consisted of 20 educable retarded children in residence at a public institution for the retarded. The control group consisted of 20 community based mentally retarded children matched on age and IQ with the experimental group. The mean CA for the experimental group was 10.7 (SD = 1.5); for the control gorup the mean CA was 10.7 (SD = 1.9). Mean IQ for the experimental group was 64.9 (SD = 9.5); for the control group, the mean IQ was 64.6 (SD = 8.9). The majority of these IQ scores, for both groups, were WISC full-range scores. There were 10 males and 10 females in the non-institutional group and 16 males and 4 females in the institutional group. Hearing and vision screening testing was administered to all children and no significant losses were encountered that might affect the decoding or encoding of verbal language. No specific subject matching was made on etiological organic factors, as there is no evidence that specific organic conditions result in peculiarly

deviant language pathologies (Lenneberg, 1967). For the experimental group the length of institutionalization was considered to be an important variable. Institutional retardates with longer lengths of institutionalization were selected for this study; the length of institutionalization ranged from 25 to 101 months with a mean of four years, six months.

Experimental Procedure

Arrangements were made for going directly into each child's place of residence to gather the language samples. A unique unstructured technique was selected for sampling the verbal language of each child. A transitorized FM wireless microphone was worn by the child as he went about his normal activities. The microphone was placed in a specially constructed cloth harness for the child that encased two short microphone antennas and was worn about six inches from the mouth. The signal generated by this microphone-transmitter was received by a Vega Receiver, Model 10, and fed into a Uher 4000 Report-L recorder. The recording speed was 15/16 ips. This speed gave four straight hours of recording time and reproduced speech adequately for later transcription. Scotch Magnetic Tape 200, .5 mil, was used for recording purposes. This procedure, as contrasted with other methods of collecting verbal language data, offered the advantage of selecting a true "slice of life" sample of each retarded child's verbal language.

The parents--and surrogate cottage parents in the case of the experimental group--were advised that the children could be permitted to do anything in the way of normal activities. The only exception to this was the taking of a shower or bath with the microphone still being worn. The recording time ranged from one hour to three and one-half hours with the majority

of recordings averaging approximately two hours.

Data Classification

Verbal Sampling Design

Words were selected as the controlling linguistic variable because they were the distinct contentive units categorized through the General Inquirer program. A sample of approximately 500 words was randomly selected from each child's recording, for a total of about 10,000 words per group of the institutional and non-institutional retarded children. A sample of slightly less than 300 words was obtained from one institutionalized child. The difference was "made up" by borrowing additional words from another closely matched institutionalized child.

Transcription of Speech

The selection of 500 representative words for each subject was carefully controlled. During the initial portions of the tapes, the subjects were prone to make verbal references connected to the language sampling process. Such remarks as "I on the radio" were quite common. For this reason transcriptions were edited to exclude any remarks related to the experimental procedure.

To control for reliability, the language samples for all forty subjects were transcribed by the investigator who had gathered the samples. Familiarity with each subject's voice and language pattern enabled the investigator to accurately transcribe each subject's language sample when competing voices and noises were present in the background of the tapes. Each child's taped language sample was played back on a Uher Report-L Transcriber with an associ-

ated manual backup switch adaptable for use with a typewriter. Inter-judge reliability of these typed transcriptions was checked by having three of these tapes randomly selected and retyped by a professional typist. Intra-judge reliability was evaluated by again randomly selecting three tapes which the investigator re-transcribed. Both inter- and intra-judge comparisons of transcriptions indicated close agreement.

Some special conventions had to be applied in editing the typescripts for the computer analysis. For example, the comma was adapted for use in certain titles such as "Mrs, Mr, Dr," in order that the computer not read the normally appearing period after these titles as terminal sentence punctuation. A pound sign (#) was used before a proper name. This pound sign eliminated any miscoding of proper names, e.g., #Miss Black.

Tagging Additional Words

It was recognized that many of the more frequent words of retarded children might not be contained in the Harvard III Psychosocial Dictionary. A random sample of six language samples from the institutional and six from the non-institutional groups were processed through a Frequency Word Listing Program developed by Hutchinson and Lynch (1970). This provided an alphabetic printout, by frequency, of all the words contained in the 12 samples. The printout from this program was then compared with a printout of the Harvard Dictionary. Those high frequency words from the retarded children's language samples not occurring in the dictionary were then coded, key punched and inserted into the Harvard Dictionary. Table 2 contains a listing of the additional high frequency words added to the dictionary.

(Approximate position of Table 2)

In assigning these non-dictionary, high frequency words to specific content categories, reference was made to similar Harvard III words already coded. For example, "mama" was coded the same as "mother" and "kitty" the same as "cat."

Computer Content Analysis Processing

The verbal data samples were entered on standard 80 column electronic data processing cards. Key punch reliability was checked by a sight comparison between the original transcripts and an 80 by 80 read-out of the key punched cards; less than one error per thousand words was found. The few errors that were found were corrected by key punching new cards and inserting these corrected cards in their proper sequence in the data decks.

At this point the data were processed, individually by subject, through the General Inquirer and content category totals obtained. This operation consisted of tabulating the number of times the text's content words were classified into each of the Harvard Dictionary categories. The content category tally operation resulted in the assignment of two types of numbers to each document analyzed: one set represented the absolute frequency of occurrence (raw score); the second represented the relative frequency of occurrence (index score) of the content categories.

RESULTS

For analysis, the word index scores were used for comparison. In order to obtain the maximum information, both parametric and non-parametric statistical tests were applied to the data. The selection of statistical tests was based on the homogeneity of variance, or lack of homogeneity of variance

assumptions, applicable to the specific content categories being analyzed.

For the majority of variables answering the assumptions for parametric comparisons, an analysis of multiple co-variance statistical technique was selected (Kirk, 1969). The content categories were treated as the dependent variables, with sex, IQ, age, and interaction functioning as the covariates.

A problem arose with respect to some of the Harvard III content categories--particularly the second-order tags--because of zero percentage word index scores. For these content categories the non-parametric Wilcoxon Signed Rank test was selected for statistical testing. Table 3 lists the significant differences comparing the institutional and non-institutional retardates on the Harvard III Dictionary content categories.

(Approximate position of Table 3 - Group)

Additional results, in the form of co-variate t-test comparisons, contrasted the retarded children by sex. Sex comparison tests were not made on several content areas because of zero frequency scores in these content categories.

(Approximate position of Table 4 - Sex)

The only content category found to be demonstrating interaction was the category good under Psychological Processes: Evaluation. This meant that the good category favoring the male retardates was influenced by the institutional/non-institutional level of analysis. Any interpretation of this good category favoring the male retardates must be tempered by this interaction effect.

Summary of Statistical Analyses

The use of Signed Ranks and covariance statistical tests indicated that a limited number of contentive categories were significantly different, with respect to group, sex, and interaction. These are summarized in Table 5.

(Approximate position of Table 5)

DISCUSSION

The results fail to confirm any significant delays or trends in the psychological and sociological verbal language content categories of institutionalized retardates when compared with non-institutionalized retarded children. Out of 83 possible content categories only five cateogires--female role, community, higher status, family, and authority theme--favored the non-institutionalized retarded children. Only four categories--other, military, sign reject, and danger theme--favored the institutionalized children.

Categories Favoring the Non-Institutionalized Subjects

The female role, favoring the community retardates, consisted of words such as "mother, mama, her, she, women, wife, sister, and girl." This appeared quite logical due to the involvement that the non-institutional retardates had in a regular family environment.

These community based children were also favored in the use of words within the community content category. Words such as "hello, name, people, park, and hi" are representative of items contained in this category. This reflects the non-institutional retarded children's greater opportunity to

interact within the community.

Under the status connotations higher status also favored the non-institutional retardates. This is a second-order category that reflects primarily the higher frequency of family words such as "daddy, father, mother, and mama."

Another category statistically favoring the community retarded children was the family category. Such words as "mother, mama, daddy, and brother" were much more common in the conversational language of the non-institutional retardates. Again, this would be expected due to the family environment of the non-institutional group.

The final second-order category favoring the non-institutional group was the authority theme category. The prevalent word among the community retardates placed in this category was "daddy."

From the above it can be observed that the reference words about family members, in the verbal language of non-institutional retardates, transcend the referent categories of female role, higher status, family and authority theme. In particular, the heavy incidence of the words "mother" and "father" and their associated synonyms are clearly weighed in favor of the non-institutional children.

In re-examining the raw data, it was noted that the institutional retardates have substitute words for surrogate female cottage parents that closely approximate "mother." These title words, such as "Miss Jones, Miss Smith, etc." were commonly used among the institutional retardates in talking with or about cottage parents, trainers and supervisors. In order to follow this up, a manual retabulation of the institutional retardates' language samples was conducted assigning the surrogate mother terms to the same

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categories--female role, higher status, and family--as the word "mother" and its derivatives were assigned in the non-institutionalized group. After completion of this additional coding, the index scores were re-computed for the institutional group and the data were subjected to additional ANOV procedures. Results indicated no significant differences between the institutional and non-institutional groups on the female role, higher status, and family content categories.

Thus only the authority theme remained favoring the institutional retardates. Since this category contained "father" and "daddy" along with the associated derivatives, it is logical that this favors the non-institutionalized children. No additional analysis was made of the data assigning the authority theme to surrogate father terms in the samples of the institutionalized children's language because so few of these surrogate father figures are available in the institutional environment. Thus the authority theme appears to be a very real difference favoring the non-institutionalized retardates.

Categories Favoring the Institutional Subjects

The other category includes words such as "you, your, them, and they." While the institutionalized retardates may know the proper names of their fellow residents, they appear to prefer the less specific pronoun words when talking with their peers in the institutional cottages. The institutional child apparently is more prone to say, "Hey, you, come here!" as "Hey, Billy, come here!" This tendency to choose the pronominal references as opposed to proper names may arise from the fact that institutionalized children have a large number of peers in the cottage environment, whereas the community based

children deal at home with a smaller number of siblings. The data may suggest that the institutionalized child might perceive his environment as somewhat depersonalized: everyone is "you" or "they"; no one has a name. Possibly there are too many people for close friendships to develop; perhaps interactions are too varied or too numerous for things to appear very stable to the child. On the other hand, the higher incidence of "other" words might imply that the institutional child is more highly "socialized", more able to interact with large as well as small groups. A higher other category does not necessarily preclude closer, individual to individual relationships in which a high frequency of proper names occur. The Harvard III does not tag proper names; however, a subjective evaluation of the institutional and non-institutional verbal language indicates that the institutional and non-institutional retardates use approximately the same quantity of proper names.

The institutional children also had higher scores on the danger theme. Within this theme are words connoting alarm or concern with danger: "blast, deviant, warn, etc." Such words as "might, lions, bears, guns, outside, red, fired, trouble, cut," found in the verbal corpus of the institutional retarded group, were included in this danger theme. The word "cut" was a very common slang word among the institutional group, e.g., "Barry done cut up." The references to animals were primarily on the story-telling basis with the cottage parents or trainers talking to the children about fairy tales and the children responding verbally. Taking this into consideration, the investigators are inclined to believe that this category does not represent an important difference between institutional and non-institutional retarded children.

A third category favoring the institutional retardates is sign reject under Psychological Themes. Within the Harvard III Dictionary, words in

this category imply interpersonal rejection: "anger, betray, jealousy, sulk, etc." Re-examining the verbal corpus of the institutional retardates, we find a preponderance of such words as "leave, out, go, and shoot," coded as sign reject. Typical sentences include, "Did you leave that out?" "My jacket is out there." Used in these contexts it appears that these words do not imply severe interpersonal rejection and not a great deal of significance can be attached to this theme with respect to differences between the institutional and non-institutional retarded children.

In summarizing the contentive categories favoring the institutional retarded children, the other category reflects the institutional child's use of non-sex-specific pronouns in adapting to a large number of peers found in the institutional envirnment. The military, sign reject, and danger theme possibly reflect unique semantic ambiguities found within the language of the institutional children as opposed to any real differences between the control and experimental groups in these categories.

Categories Favoring Male Retardates

Four categories, male role, social place, good, and female theme, significantly favored the male retardates. High frequency male role words included "man, he, him, sir, brother, boy, daddy, and his." Quite logically, apparently due to their sex identification, retarded boys' conversation revolves more around masculine themes.

Social place words were also more prevalent in the conversation of male retardates. The social place content category represents building and building parts, political, social, and economic locations. Examples of words falling within this category, used more by male retardates, include "door, home,

somewhere, town, cottage, clean, hall, places, gate, city, bed, yard, and school." Of particular interest is the observation that there is a significant interacting variable in the analysis of covariance of social place. Many of the social place words related to the cottage environment so familiar to the institutional retardates. With 16 out of the 20 institutional retardates being male, these investigators feel that the interaction effect is significant with respect to a higher incidence of social place words being found among the institutional males. These 16 institutional male retardates have the highest mean incidence of social place words as compared to the non-institutional males. Much of the institutional retardate's life revolves around the cottage and its environment. They play, work, and live in the cottage and this is reflected in their conversational language.

The good category, under Psychological Processes, reached a statistical level of significance favoring the male retardates. The interaction covariate was also significant and further interpretation of the data revealed that, like social place, the male institutional retardates have the highest mean average of words in the good category. These included words such as "alright, right, and clean." The most popular word in this category used by the male retardates was the word "right." Due to the semantic diffusion of the word "right" found in the institutional retardates' language, it would be hazardous to imply any significance with respect to the good category appearing more in the language of the male institutional retardates.

The final content category favoring the male retardates was the female theme. This theme represents psychoanalytic symbols of feminity (i.e., blood, button, velvet, etc.). Words tagged with the female theme used by males in this study include "kitty, cat, white, home, chicken, cream, doll, water, and

soft." One intriguing interpretation of these results might indicate that retarded males have a significant subconscious preoccupation with the female sex through symbolic words. However, as Dunphy (1966) indicated, efforts to deal objectively with latent imagery have not been successful.

Categories Favoring Female Retardates

Only one content category, female role, was found to significantly favor the female over the male retardates. Female role words included "girl, sister, mother (and its derivatives), her, and lady." Due to their sex identification, retarded girls tend to use more feminine gender words in their propositional speech.

CONCLUSIONS

Of the seventy-six sociological and psychological contentive categories compared between the institutional and non-institutional, only two categories--community, favoring the non-institutional retardates and other, favoring the institutional--reflected valid differences between the institutional and non-institutional retardates. The remaining differences were accounted for by extended manual processing of the data plus a few institutional related semantic ambiguities.

The results of this study do not support the assumption that the verbal language of institutional children reflects less advanced levels in the children's relationship to persons, roles, and cultural patterns as contrasted to the language of non-institutionalized retardates. No deficit in emotions, thought processes and evaluations were found in comparing the institutional children to their community-based peers. The behavioral processes of social-

emotional and instrumental actions do not show differences favoring non-institutional retardates. The institutional retardates do not show deficiencies to their community peers in time, space, quantity and quality references. As measured by the Harvard III Dictionary on the underlying levels of verbal language, there are no institutional, status, or psychological theme deficits among the non-institutionalized retardates.

These results are in sharp contrast to the earlier reported studies (Little and Williams, 1937; Schlanger, 1954; Lyle, 1960; and Sievers and Essa, 1961), suggesting that the institutional environment may affect at least certain portions of verbal language in a negative fashion. The conflicting results may merely reflect differences between a superior institutional environment for the subjects of this study and those environments from which institutional subjects were drawn in the earlier studies.

Another interpretation relates to the nature of this study and the previously reported studies investigating language between institutionalized and non-institutionalized retarded children. The earlier studies were concerned with structural language comparisons and vocabulary whereas this study investigated the content of the verbal language. Perhaps institutional retarded children, as a whole, have restricted st ctural language and vocabulary components whereas the content or referent area of their language patterns are essentially normal. This might be supported by the notion that there is no hard data available supporting a correlation between the structural and contentive areas of the language of retarded children. Another interpretation may be attributed to the time element. During the earlier reported studies, more of an institutional deprivation may have actually occurred. Within the last decade there has been a larger infusion of funds and personnel

into institutions, creating a much better environment for language development. Indeed, there is some limited support to indicate that in some aspects the institutional environment may be superior to the non-institutional environment for educable retarded children. In a recent study Montague (1973) showed that the socio-economic status of the surrogate cottage parents of institutionalized retardates was superior to that of the natural parents of matched non-institutionalized retardates.

A final comment should be made on the application of the General Inquirer and the associated Harvard III Dictionary. While some limited semantic ambiguities were noted, this system offers a research tool for the important study of the psychological and sociological aspects of the verbal behavior of the retarded. Its application can be longitudinal as well as descriptive, permitting an objective method for studying change in verbal content behavior as different treatment approaches and environments are applied to the mentally retarded.

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ACKNOWLEDGMENT

This investigation is a portion of a doctoral dissertation by the senior author submitted to the University of Florida, under the direction of Dr. Edward C. Hutchinson. The authors would like to thank Mrs. Laverne Graves and Mr. Gary Collings of the Exceptional Child Education program in Marion County, Florida; Mr. Marc Morgan and Mrs. Myrna Gross at Sunland Training Center, Gainesville, Florida. A special note of thanks is due Mrs. Mary Lynch, Computer Programmer, University of Florida Computer Center, for her help with the various computer language programs used in this study. The senior author was supported during this research by an Office of Education Fellowship. A special grant from the American Speech and Hearing Foundation helped support the considerable data processing expense involved in this study.

REFERENCES

Arp, D. J., Miller, P., and Psathas, G., A Brief Introduction to the System 360 Inquirer II Content Analysis Techniques, Communication Research Center Report No. 35. Boston: Boston Univ. (1968).

Badt, M. I., Levels of abstraction in vocabulary definitions of mentally retarded school children. Am. J. of Mental Deficiency, 63, 241-246 (1958).

Dunphy, C., The construction of categories for content analysis dictionaries, in P. J. Stone (Ed.) The General Inquirer: A Computer Approach to Content Analysis. Cambridge: The M.I.T. Press (1966).

Hutchinson, E. C., and Lynch, M.C., Frequency word listing program, computer program developed at the University of Florida Computing Center, Gainesville, Fla. (1970).

Kirk, R. E., Experimental Design: Procedures for the Behavioral Sciences. Belmont, Calif.: Wadsworth Publishing Co., Inc. (1969).

Klaber, M. M., The retarded and institutions for the retarded - a preliminary research report, in S. Sarason and J. Doris (Eds.), Psychological Problems in Mental Deficiency. New York: Harper and Row, Ch. 9 (1969).

Lenneberg, E. H., Biological Foundation of Language, New York: Wiley (1967).

Little, M. F., and Williams, H. M., An analytical study of language achievement, Univ. of Iowa Studies in Child Welfare, 13, 49-94 (1937).

Lyle, J., Some factors affecting the speech development of imbecile children in an institution, J. child Psychol. Psychiatr., 2, 121-129 (1960).

Montague, J. C., Surrogate and natural parent comparisons between institutional and non-institutional children. Training School Bulletin, 67, 185-190 (1973).

Pine, S., An analysis of the content of oral language patterns of children, Ph.D. Dissertation, University of Florida, Gainesville, Fla. (1970).

Schlanger, B., Environmental influences on the verbal output of mentally retarded children. J. Speech and Hearing Dis., 19, 339-343 (1954).

Sievers, D. J., and Essa, S. H., Language development in institutionalized and community mentally retarded children, Am. J. of Mental Deficiency, 66, 413-420 (1961).

Smith, M. S., The development of a content analysis measuring instrument, in P. J. Stone (Ed.), The General Inquirer: A Computer Approach to Content Analysis. Cambridge: The M.I.T. Press, ch. 6 (1966).

Stone, P. J., Dunphy, D. C., Smith, M. S., and Ogilvie, D. M., The General Inquirer: A Computer Approach to Content Analysis. Cambridge: The M.I.T. Press (1966).

Table 1. Harvard third psychosociological dictionary content categories.

FIRST-ORDER TAGS

Objects

Social Realm

-Persons

Self
Selves
Other

-Roles

Male-Role
Female-Role
Neuter-Role
Job-Role

-Collectivities

Small-Group
Large-Group

Cultural Realm

-Cultural Objects

Food
Tools
Clothing

-Cultural Patterns

Ideal-Value
Deviation-Values
Action-Norm (norms)
Message-Form
Thought-Form (concepts)
Nonspecific-Object

Cultural Realm (cont.)

-Cultural Setting

Social Place

Natural Realm

Body Part
Natural Object
Natural World

Qualifiers

Time Reference
Space Reference
Quantity Reference
Quality (Sensory) Reference

Processes

Psychological Processes

-Emotions

Arousal Anger
Urge Pleasure
Affection Distress

-Thought

Sense If Equal
Think Not Cause

Processes (cont.)

Psychol. Processes (cont.)

-Evaluation

Good Ought
Bad

Behavioral Processes

-Social-Emotional Actions

Approach Avoid
Guide Follow
Control Communicate
Attack

-Instrumental Actions

Attempt Get
Work Possess
Move Expel

SECOND-ORDER TAGS

Institutional Contexts

Academic
Artistic
Community
Economic
Family
Legal
Medical
Military
Political
Recreational
Religious
Technological

Status Connotations

Higher-Status
Peer-Status
Lower-Status

Psychological Themes

a. Overstate
   Understate
b. Sign-Strong
   Sign-Weak
c. Sign-Accept
   Sign-Reject
d. Male-Theme
   Female-Theme
e. Ascend-Theme
f. Authority-Theme
g. Danger-Theme
   Death-Theme

Table 2. High frequency retarded children's words added to the Harvard dictionary.

Word	First-Order Tag	Second-Order Tag
mama	Female-Role	Family, Higher-Status
yeah		Sign-Accept
play	Pleasure	Recreational
daddy	Male-Role	Higher-Status, Family, Authority Theme
OK		Sign-Accept
one-ten	Quantity Reference	
huh	Communicate	
bye	Affection	Sign-Accept
cheat	Bad	Sign-Reject
alright	Good	Sign-Accept
beat	Anger	Sign-Strong
football		Recreation, Male-Theme
hi	Affection	Sign-Accept, Community
mom	Female-Role	Family, Higher-Status
cowboy	Job-Role	Technological, Sign-Strong
car	Tool	Male-Theme, Economic
kitty	Natural-Object	Female-Theme
TV	Tool	Recreational
television	Tool	Recreational
cookie	Food	
una	Not	
donkey	Natural-Object	Male-Theme, Recreational
unhun		Sign-Accept

Table 3. Summary of significant covariance F or signed rank tests for content categories favoring non-institutionalized and institutionalized groups.

Harvard III Dictionary Content Category	Favoring Non-Institutionalized Group	Favoring Institutionalized Group
Social Realm: Persons		
OTHER	--	.01
Social Realm: Role		
FEMALE ROLE	.05	--
Institutional Contexts		
COMMUNITY	.01*	--
FAMILY	.01*	--
MILITARY	--	.05*
Status Connotations		
HIGHER STATUS	.01	--
Psychological Themes		
SIGN REJECT	--	.05
AUTHORITY THEME	.05*	--
DANGER THEME	--	.05*

* Signed Ranks

Table 4. Summary of T-Tests from analysis of covariance comparing the retarded children by the sex covariate.

Harvard III Dictionary Content Category	Significant t's Favoring Female Group	Significant t's Favoring Male Group
Social Realm: Role		
MALE ROLE	--	.05
FEMALE ROLE	.05*	--
Cultural Realm: Setting		
SOCIAL PLACE	--	.05
Psychological Processes: Evaluation		
GOOD	--	.05*
Psychological Themes		
FEMALE THEME	--	.05

* All of the t's are computed on a two-tailed test. If a one-tailed test is employed, female role and good become significant at the .05 level favoring the female and male groups respectively.

Table 5. Summary table of significant content categories for group, sex, and interaction.

Variable	Content Categories Favored
Non-Institutionalized Retardates	FEMALE ROLE
	COMMUNITY
	HIGHER STATUS
	FAMILY
	AUTHORITY THEME
Institutionalized Retardates	OTHER
	MILITARY
	SIGN REJECT
	DANGER THEME
Female Retardates	FEMALE ROLE*
Male Retardates	MALE ROLE
	GOOD*
	SOCIAL PLACE
	FEMALE THEME
Interaction of Group and Sex	SOCIAL PLACE*
	GOOD

*.05 one-tailed test of significance.